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ABSTRACT

Sixty-six children from average and low-ability reading groups in grades one through five participated in a study of the effects of vocabulary instruction on reading comprehension. The children were pretested for their ability to identify words and to supply meanings for the new vocabulary words in the next basal reader story they encountered. The instructional conditions involved either a seven-step method of teaching new vocabulary in depth followed by a reading of the story, or merely a reading of the story without vocabulary instruction. Identical posttests followed each instructional condition. This procedure was repeated so that all the children participated in both instructional conditions. Results showed that vocabulary instruction did not produce significant gains on posttest performance in word identification. However, vocabulary instruction did significantly affect posttest scores for meaning knowledge. Beginning readers (grades one and two) showed significantly more gains overall than did intermediate-grade readers (grades three to five), while children in low-ability reading groups, especially, profited from direct word-meaning instruction. (RL)

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Effects of Vocabulary Instruction on Reading Comprehension

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The relationship between vocabulary and comprehension--logical correlates in need of supporting data--underlay the purposes of this study. They were:

1) to determine whether children need to learn the designated "new" vocabulary words of their basal readers--or if they already know them;
2) to determine whether principles of teaching vocabulary--extracted from the literature and taught to teachers--would result in gains in their students' ability to identify and supply meanings for words; and
3) to determine whether vocabulary instruction has an effect on comprehension.

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From a review of the literature, some principles for successfully teaching vocabulary seemed to emerge:

1. The teaching of vocabulary must be direct and systematic. (Gray, 1938; Dale et al., 1971; O'Rourke, 1974; Jenkins et al., 1978; Becker, 1977; Dale & Milligan, 1970.)
2. Instruction should help the learner draw the relationships between words to be learned and the learner's own background, needs, and interests. (Gipe, 1978-79; Addy, 1941; Clifford, 1978; Manzo & Sherk, 1971-72; Carroll, 1964; O'Rourke, 1974.)
3. Instruction should provide in-depth work with vocabulary words rather than cursory attention. (Deighton, 1959; Johnson & Pearson, 1978.)

While strategies can be indentified, there is little evidence to suggest that they are being employed in any systematic way. Durkin (1978-79) noted the absence of attention to vocabulary instruction when, after observing over 4,000 minutes of reading instruction in 24 classrooms, she found only 2.6 percent of the instructional time devoted to word meanings--whether in teaching, review, or in application. This finding corroborated that of Austin and Morrison who concluded that, while there was considerable stress placed on the development of word recognition techniques in classrooms, there was little corresponding attention to the meanings of words. As further corroboration, we observed the reading lessons of 12 classrooms teachers in grades one through five in order to determine the extent of their vocabulary instruction. We observed a total of 40 reading lessons over a 3 month span, or approximately 1200 minutes of reading

instruction. The total time spent on instruction in word meaning was 65 minutes. The mean was 1.67 minutes per lesson, with a range from 0 to 12 minutes. But more important, the mode was zero. Further, we asked these same teachers to keep a daily journal of their attention to vocabulary instruction throughout the day in content area subjects. The attention to word-meaning instruction seemed minimal or missing.

Explanations for inattention to vocabulary instruction are few. Logic suggests that teachers have too little time or, alternatively, they perceive that children do not need vocabulary instruction, or need it less than they do other skills. The literature seems clearer on other instructional questions, e.g., instruction in vocabulary tends to result in students learning vocabulary, although this learning is not necessarily judged in relation to a school-type reading task. Third, the relation between vocabulary and comprehension, while seemingly a close one, is not instructionally untangled.

Method

Subjects

Sixty-six children were involved in the study. Approximately half were from middle reading groups, and half from low reading groups. Similarly, lower grade children (grades 1 and 2) and middle grade children (grades 3, 4, and 5) were equally represented. The children were from 12 different classrooms in 7 lower to middle class schools in Austin, Texas. Their instructors for the experiment were their normal classroom teachers. These 12 teachers were enrolled in a Masters of Education program and participated in the study to fulfill a course requirement.

Before instruction began, Informal Reading Inventories, built from the classroom's basal series, were administered to validate the students'

instructional level and accuracy of placement. Reading groups were selected for the study that had all children reading at an instructional level in their basal. Middle reading groups were all receiving instruction in a basal equivalent to their grade placement. Low reading groups were at an instructional level in their basals also, but their basals were on a grade level below their current grade placement.

Materials

Vocabulary words tested in the study were the "new" words in a story as identified by the American Book Company or Scott-Foresman basal reader teachers' editions (between 5 and 10 words per story). Each reading group was tested on the vocabulary from 2 consecutive basal stories in the basal they were currently reading. The stories were selected because they were the ones that normally would have been introduced next in class.

Design

Because we were interested in results generalizable to actual classroom situations, we chose to test the effects of vocabulary instruction on intact reading groups, with the normal classroom teacher as the instructor.

All subjects in the experiment participated in both an instruction and no instruction condition. Order of the conditions was randomized. In each condition there were identical pre- and post-tests on word identification and meaning knowledge. We had a 2x2x2 design with 2 between and 1 within subjects factors. The within subjects factor was Instructional Condition (Instruction or No Instruction). The between subjects factors were Reading Group (Middle or Low) and Grade (Grades 1 & 2 vs. Grades 3,4, & 5). There were 3 dependent measures: % Word Identification Gain (pre- to post-test), % Meaning Gain (pre- to post-test) and % Comprehension Questions answered correctly.

The comprehension questions were developed to tap literal grasp of the passage in which the new vocabulary word first appeared. For example, if the new word was measure, a question and probes were framed to gauge whether a child had understanding of the passage in which the word measure appeared.

T: What did Billy's mother do on Billy's birthday?

C: She measured him on the wall.

T: What did Billy's mother want to know?

C: How much Billy had grown.

Through this procedure, judgments of comprehension were subjective and accuracy determinations were left to the teacher's discretion. In each instance--for each child--the determination of comprehension was done individually and the decision made was whether or not the question was answered accurately. There was no partial scoring--an answer was either judged correct or incorrect.

Procedure

All 66 children in grades one through five representing either the teacher's middle or low reading group were pretested individually both in ability to identify words and to supply meanings for the new vocabulary words in the next consecutive basal reader story to be encountered. All words were identified by the teacher's editions as being the "new words." Pre-test procedures involved asking individuals to first pronounce vocabulary words displayed on 3" by 5" index cards. Next, the word was pronounced (without the card present), and the child was asked what the word meant. Testers were given training in how to probe the child's responses in order to make accurate judgments of the child's grasp of a word's meaning.

All teachers were taught a method of teaching vocabulary based on the overarching principles described in the literature review (direct teaching, drawing relationships between vocabulary and the readers, and in-depth treatment). The following procedure served as the instructional steps for presenting new words:

1. Teachers provided a chart containing sentences that gave clues to the new vocabulary words. Each sentence contained a blank where the target word should be. Next to the chart (along the chalkboard ledge) the vocabulary word cards were displayed.
2. Teachers read the sentences aloud.
3. Children were encouraged to decide which new word fit the context. Correct suggestions as well as incorrect ones were tried in the sentences, and children were asked to make judgments about sentence sense. Children were also encouraged to tell what else they knew about a word. Teachers expanded on definitions by attempting to relate the words to the children's lives.
4. A child who correctly identified the new word was asked to tell some ways he accomplished this. This step was designed to ensure that children extracted strategies from their knowledge of language and reading for use in determining word meanings independently.
5. The sentences was reread with the correct word physically inserted.
6. After all the words had been inserted into spaces, the words were reviewed in random order.

7. The procedure varied in time demands from 8 to 12 minutes. The emphasis of the vocabulary instruction was on meaning, though a by-product of seeing the words might be increased word identification skill.

The groups were randomly assigned to an instruction or no instruction condition for the first story. For the next story lesson, the groups were reversed. In both conditons (instruction or no instruction), post-testing included an opportunity to 1) identify the new word; 2) supply a meaning or offer an example of that word; and 3) answer orally presently literal or textually explicit questions about the story, the answers to which involved the words that were taught.

Analysis of data

Data were originally scored as percentages (i.e., percent words correct out of total words tested), and percentages are indicated on the first 2 graphs. We used a weighted means ANOVA to analyze the data on the 3 dependent measures--Word Identification, Meaning, and Comprehension. Word Identification and Meaning Identification are treated as gain scores (the percent difference between the pre- and post-tests in the Instruction and No Instruction conditions). However, all the data were logarithmically transformed from percentages before they were entered into the ANOVAs, using a logit transformation.

Results and Discussion

Means, F value, and standard deviations are reported in Table 1 for reading groups, grade level, and instructional condition comparisons. Discussion will be based on the questions which guided the study.

What proportion of "new" words in a basal story can students identify and supply meanings for prior to reading the story? Results of the study indicated that, prior to reading their basal stories, both low and middle group children recognized only about half the words specified as "new" words by the teachers' editions. Intermediate grade students (Grades 3,4,5) identified 72% of the "new" words while beginning readers (Grades 1 & 2) identified only 42.8% of the "new" words prior to reading the basal story.

Middle reading group children could supply the meanings for 64% of the "new" words prior to story reading while low reading group children supplied 48% of the "new" word meanings. Grade levels appeared about the same in knowing word meanings prior to story reading (Grades 1 & 2--55.8%; Grades 3,4,5--58.9%).

Do children show gains from vocabulary instruction in word identification and meaning knowledge? Vocabulary instruction did not produce significant gains on post-test performances in word identification. This is not surprising in that the focus of the instruction was on meaning. Interestingly, students showed gains on the post-tests after simply reading the "new" words in the context of the story. Beginning readers (Grades 1 & 2), regardless of group membership, showed significantly more gains overall than did intermediate grade readers (Grades 3, 4 & 5).

Specific vocabulary instruction prior to reading a story, however, signficantly affected the post-test performances of meaning knowledge. While children appear to be successful learning to identify words by simply reading those words in the basal story context, they do not appear to be as successful learning the meaning of words through story

context. Rather, direct instruction in word meaning prior to story reading appears especially helpful. In particular, there is an indication that low reading group children profit from direct word meaning instruction (Reading Group x Instruction Condition $F(1,63) = 3.6$, $p < .06$, Table 1). At intermediate levels, similar mean gains were achieved regardless of group membership, but younger readers in the low groups made significantly greater gains than both their peers in the middle group and intermediate level low group children (Reading Group x Grade Level $F(1,64) = 4.3$, $p < .05$, Table 1). Overall, direct meaning instruction seems beneficial and, for low reading groups, perhaps essential.

Is there an effect of vocabulary instruction on comprehension (as measured by answers to textually explicit questions, the answers to which involve the vocabulary that was pre-tested)? The vocabulary instruction we employed emphasized growth in knowledge of word meanings. We were interested in whether this vocabulary instruction would translate into improved story comprehension. While there was no signficant main effect of vocabulary instruction, there were significant interactions which parallel our previous findings that low reading groups, especially those at intermediate levels, are the most needy of direct vocabulary instruction. Without vocabulary instruction, the comprehension of low ability groups suffers.

Conclusions

Thus, we have found that children do not appear to know all the words prior to instruction, yet that instruction itself has less effect on word identification than does grade placement. Lower grade children make significantly greater gains in word recognition regardless of reading

group membership. This may be attributed to the relative difficulty of the words intermediate grade children were asked to pronounce or that beginners are somehow attuned to word identification because of the instruction emphasis of their program.

Growth in word meaning is expectedly affected by instruction. In addition, lower grade children assigned to low reading groups made the most significant gains in meaning knowledge. Again, this phenomenon can be related to the group's relative need for vocabulary.

Finally, instruction in vocabulary appears to have had the greatest effect on improving the comprehension of the intermediate grade children assigned to low reading groups. Intermediate grade children in middle ability groups were least dependent on vocabulary instruction for making gains in comprehension. They were able to answer textually explicit questions with a good deal of accuracy in both instruction conditions. Lower grade, low reading group children also improved as a result of instruction. Apparently, if teachers decide to spend time on vocabulary instruction, the comprehension of their low ability children will improve. As text difficulty increases for those low group children--as for those placed in intermediate readers--the effects on word meaning instruction will be most pronounced.

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Table 1

Analysis of Variance for Reading Groups x Grade Levels

	F	Means	SD
Word Identification[a]			
Reading Group	.7		
Middle		34.9	20.4
Low		30.5	26.9
Grade	6.6*		
1,2		40.7	23.7
3,4,5		18.5	14.5
Instruction	3.8		
Instruction		35.0	24.0
No Instruction		31.0	23.1
Grade x Instruction	.8		
1,2/I		44.4	23.1
1,2/NI		37.0	24.4
3,4,5/I		17.3	13.7
3,4,5/NI		19.6	15.3
Rdg. Grp. x Instruction	.9		
M/I		34.4	20.4
M/NI		35.4	20.4
L/I		35.7	28.4
L/NI			
Rdg. Grp. x Grade	4.4*		
1,2/M		37.7	15.3
1,2/L		47.7	23.6
3,4,5/M		22.8	8.1
3,4,5/L		16.6	10.3
Rdg. Grp. x Grade x Instruction	.1		
Meaning[a]			
Reading Group	.0		
Middle		28.1	23.9
Low		30.3	21.4
Grade	.6		
1,2		29.4	25.6
3,4,5		28.4	16.9
Instruction	10.0**		
Instruction		32.6	23.6
No Instruction		25.4	22.3

	F	Means	SD
Rdg. Grp. x Instruction	3.6		
M/I		28.9	23.4
M/NI		27.2	24.5
L/I		37.4	23.4
L/NI		23.1	19.3
Grade x Instruction	.4		
1,2/I		34.4	26.4
1,2/NI		24.3	24.9
3,4,5/I		29.3	17.2
3,4,5/NI		27.4	16.6
Rdg. Grp. x Grade	4.3*		
1,2/M		27.5	21.5
1,2/L		33.9	21.4
3,4,5/M		30.6	9.8
3,4,5/L		27.3	14.4
Rdg. Grp. x Grade x Instruction	.1		
Comprehension[b]			
Reading Group	4.2*		
Middle		81.6	19.1
Low		76.7	21.5
Grade	4.0*		
1,2		85.8	18.0
3,4,5		74.7	24.2
Instruction	2.8		
Instruction		84.5	16.9
No Instruction		76.1	25.2
Rdg. Grp. x Instruction	4.7*		
M/I		85.7	18.1
M/NI		86.5	20.1
L/I		84.8	15.5
L/NI		68.6	27.6
Grade x Instruction	.1		
1,2/I		87.3	16.7
1,2/NI		84.3	19.3
3,4,5/I		81.6	17.1
3,4,5/NI		67.9	31.2
Rdg. Grp. x Grade	8.1**		
1,2/M		83.9	15.9
1,2/L		90.1	10.1
3,4,5/M		95.3	8.0
3,4,5/L		65.8	16.7

	F	Means	SD
Rdg. Grp. x Grade x Instruction	8.2**		
Instruction			
1,2/M		84.5	18.7
1,2/L		93.6	8.6
3,4,5/M		90.6	16.1
3,4,5/L		77.7	16.4
No Instruction			
1,2/M		83.3	21.1
1,2/L		86.7	14.7
3,4,5/M		95.0	10.0
3,4,5/L		53.9	27.1

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* $F(1,63) = 3.99$, $p < .05$

** $F(1,63) = 7.05$, $p < .01$

[a] Means are percent gains between pre- and post-tests.

[b] Means are mean percent correct.

Figure 1:

% Correct Word Pronunciations
Prior to Instruction

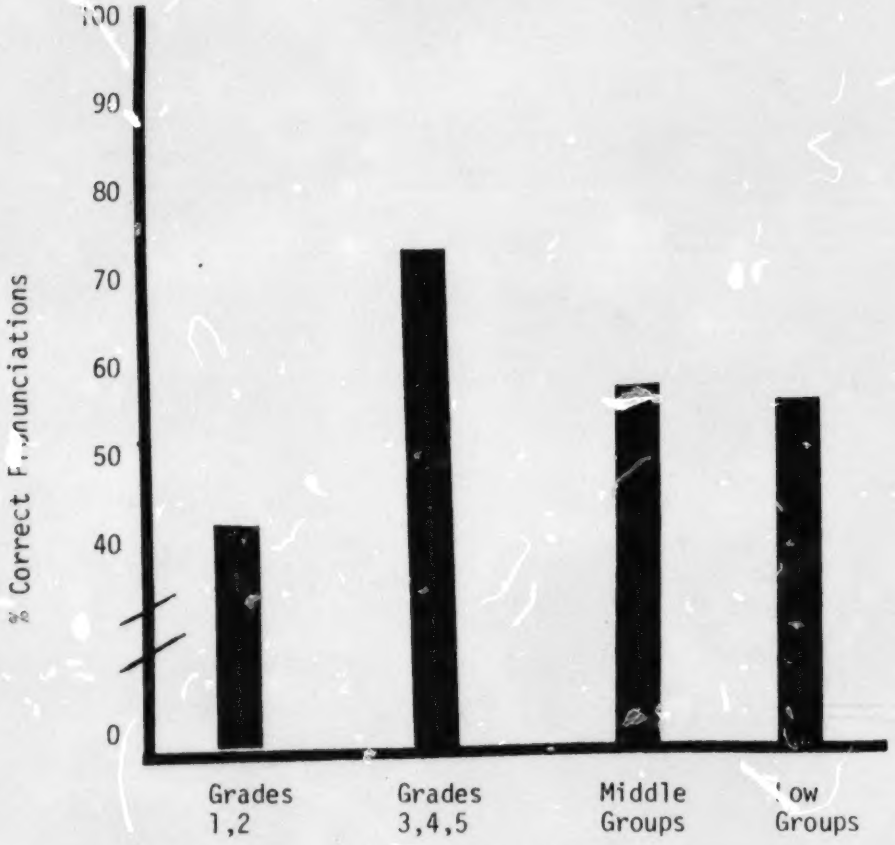
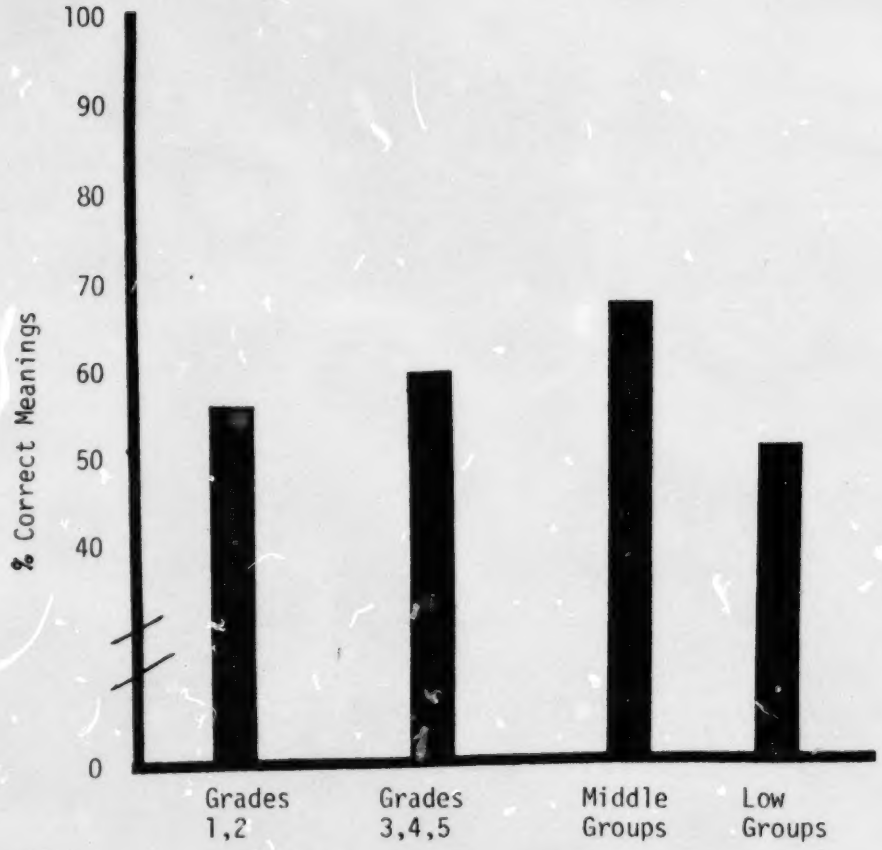


Figure 2:

% Correct Meanings Supplied
Prior to Instruction



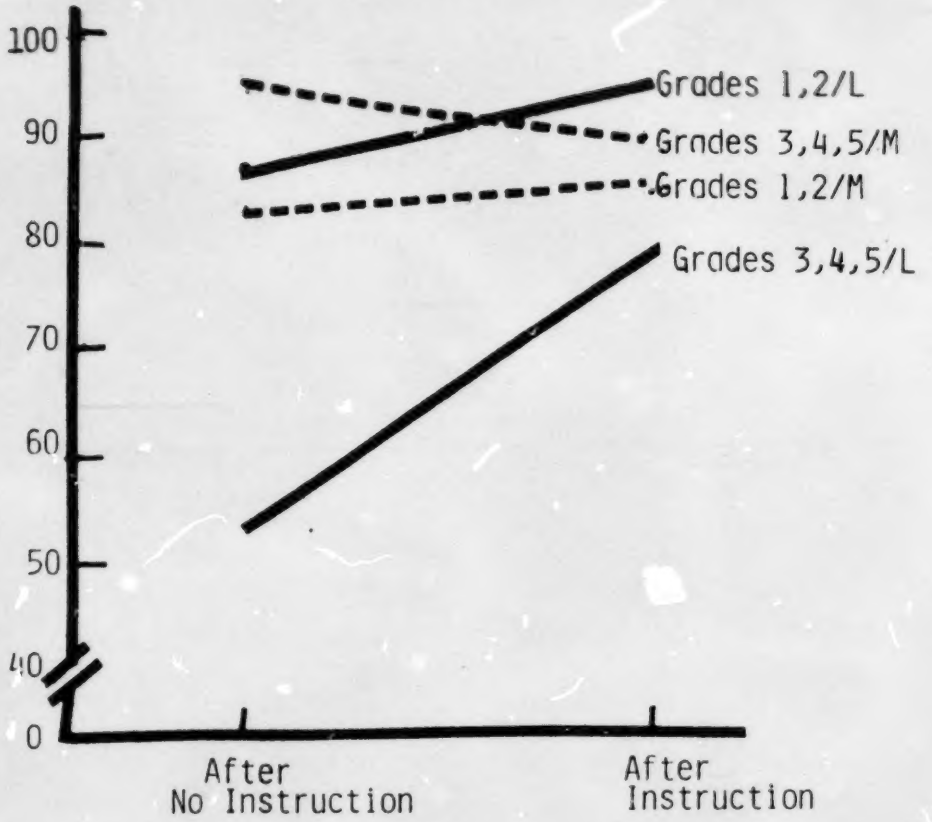


Figure 3:

Interaction of
Reading Group x Grade Level x Instruction